17. (Amended) A method of manufacturing high temperature superconducting coils, the method comprising:

(a) winding a first layer of high temperature superconducting tape onto a bobbin;

(b) applying a binder to the wound high temperature superconducting tape;

(c) compressing the high temperature superconducting tape and the binder;

(d) winding a next layer of high temperature superconducting tape onto the bobbin;

(e) repeating steps (b), (c) and (d) until a desired number of high temperature superconducting tape layers are wound onto the bobbin; and

(f) baking the layers of compressed high temperature superconducting tape and the binder to thereby cure the binder.

REMARKS

Claims 9-13, 16 and 17 are present in this application. By this Amendment, the specification and claims 9-13 and 17 have been amended, and claims 1-8, 14 and 15 have been canceled. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

The drawings were objected under 37 C.F.R. §1.83(a). With respect to an illustration of HTS tape wound onto the bobbin, Applicants respectfully submit that this subject matter is shown in Figure 1. As described in the specification, Figure 1 is an assembly drawing showing the apparatus and method for manufacturing HTS racetrack coil of the invention. Those of ordinary skill in the art could readily ascertain that the winding 18 is wound onto the bobbin 12, particularly in light of the specification. With

respect to a binder applied to the HTS tape, a Request for Approval of Drawing Corrections is being filed concurrently herewith, showing a binder applied to the HTS tape 18. Finally, without conceding the objection, claims 14 and 15 have been canceled. Withdrawal of the rejection is requested.

With respect to the related applications, the specification has been amended herein to insert updated information concerning the related applications. Additionally, the acronym HTS has been removed from the claims.

Claims 14 and 15 were rejected under 35 U.S.C. §112, first paragraph. Without conceding this rejection, claims 14 and 15 have been canceled. Withdrawal of the rejection is thus requested.

Claims 9-16 were rejected under 35 U.S.C. §112, second paragraph. Claim 9 has been amended to clarify that the compressing step is performed with the plurality of blocks. The noted instances of insufficient antecedent basis have been corrected herein. Finally, with respect to the contentions concerning claim 15, claim 15 has been canceled by this Amendment. Withdrawal of the rejection is thus respectfully requested.

Claim 17 was rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,434,129 to Motowidlo et al. This rejection is respectfully traversed.

Motowidlo discloses a method for producing long length high temperature superconductor coils. A wire 14 of intermediate rectangular dimensions is bent around a cylindrical barrel or mandrel 16 to form a coil 14 as shown in Figure 3. The coil is then cut into rings 22, and each ring 22 is individually pressed and heat treated until the desired thickness and width is obtained. In an effort to more clearly distinguish claim 17

from this construction, claim 17 has been amended to define a method wherein multiple layers of HTS tape are wound onto a bobbin, with a binder and compression being applied to each layer. As is apparent from the Motowidlo description, Motowidlo lacks at least this multiple layer construction of manufacturing high temperature superconducting coils. Since this subject matter is lacking in the Motowidlo patent, Applicants submit that the rejection is misplaced.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claim 17 was further rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,187,859 to Heim. This rejection is respectfully traversed.

Heim discloses a method of preloading superconducting coils using materials with different thermal expansion coefficients. With reference to Figure 4, a cable-in-conduit 25, including cable 26 surrounded by conduit 28, is wrapped with a glass or ceramic tape 34 and wound around a winding cylinder 23. Similar to the Motowidlo patent, however, Heim lacks the claimed layered construction of a high temperature superconducting coil. For at least this reason, Applicants respectfully submit that the rejection is misplaced.

Reconsideration and withdrawal of the rejection are respectfully requested.

Applicants acknowledge with appreciation the indication of allowable subject matter in claims 9-13 and 16.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the claims are patentable over the art of record and that the application is in condition for allowance. Should the Examiner believe that anything further is desirable in order to

place the application in condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Prompt passage to issuance is earnestly solicited.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned "**Version With Markings To Show Changes Made.**"

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: Alan M. Kagen

Alan M. Kagen
Reg. No. 36,178

AMK:jls
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Please amend paragraphs [0002]-[0015] as follows:

[0002] U.S. Patent Application Serial No. [__/___,___] 09/854,932 entitled "Superconducting Synchronous Machine Having Rotor And A Plurality Of Super-Conducting Field Coil Windings", filed May 15, 2001 (atty. dkt. 839-1004);

[0003] - Intentionally left blank - paragraph previously deleted

[0004] U.S. Patent Application Serial No. [__/___,___] 09/854,933 entitled "High Temperature Super-Conducting Rotor Coil Support With Split Coil Housing And Assembly Method", filed May 15, 2001 (atty. dkt. 839-1006);

[0005] U.S. Patent Application Serial No. [__/___,___] 09/854,931 entitled "Synchronous Machine Having Cryogenic Gas Transfer Coupling To Rotor With Super-Conducting Coils", filed May 15, 2001 (atty. dkt. 839-1007);

[0006] U.S. Patent Application Serial No. [__/___,___] 09/855,026 entitled "High Temperature Super-Conducting Synchronous Rotor Coil Support With Tension Rods And Method For Assembly Of Coil Support", filed May 15, 2001 (atty. dkt. 839-1008);

[0007] U.S. Patent Application Serial No. [__/___,___] 09/854,946 entitled "High Temperature Super-Conducting Rotor Coil Support With Tension Rods And Bolts And Assembly Method", filed May 15, 2001 (atty. dkt. 839-1009);

[0008] U.S. Patent Application Serial No. [__/___,___] 09/854,939 entitled "High Temperature Super-Conducting Coils Supported By An Iron Core Rotor", filed May 15, 2001 (atty. dkt. 839-1010);

[0009] U.S. Patent Application Serial No. [__/___,___] 09/854,938 entitled "High Temperature Super-Conducting Synchronous Rotor Having An Electromagnetic Shield And Method For Assembly", filed May 15, 2001 (atty. dkt. 839-1011);

[0010] U.S. Patent Application Serial No. [__/___,___] 09/854,940 entitled "High Temperature Super-Conducting Rotor Coil Support And Coil Support Method", filed May 15, 2001 (atty. dkt. 839-1012);

[0011] U.S. Patent Application Serial No. [__/___,___] 09/878,327 entitled "Account Management System", filed May 15, 2001 (atty. dkt. 839-1013);

[0012] U.S. Patent Application Serial No. [__/___,___] 09/854,937 entitled "High Temperature Super-Conducting Rotor Having A Vacuum Vessel And Electromagnetic Shield And Method For Assembly", filed May 15, 2001 (atty. dkt. 839-1016);

[0013] U.S. Patent Application Serial No. [__/___,___] 09/854,944 entitled "A High Power Density Super-Conducting Electric Machine", filed May 15, 2001 (atty. dkt. 839-1019);

[0014] U.S. Patent Application Serial No. [__/___,___] 09/854,943 entitled "Cryogenic Cooling System For Rotor Having A High Temperature Super-Conducting Field Winding", filed May 15, 2001 (atty. dkt. 839-1062); and

[0015] U.S. Patent Application Serial No. [__/___,___] 09/855,034 entitled "High Temperature Superconducting Rotor Power Leads", filed May 15, 2001 (atty. dkt. 839-1064).

Please amend paragraph [0028] as follows:

[0028] In manufacturing the HTS coil, a start lead of the coil is soldered to a lead terminal, such as a copper lead terminal or the like, that is secured to one of the side plates 14 near the center line axis of the coil. A layer of binder 19 such as pre-preg filament plies or a thermoplastic material such as polyester is applied on the bobbin 12, then a first layer of the HTS tape is wound. The blocks 16 are bolted on the side plates 14, particularly at least the straight blocks, to compress the straight sections of the first layer against the bobbin 12 so that the first layer of tape, the pre-preg layer, and the bobbin 12 all stick together. A second layer of binder material (pre-preg filament plies) is applied on top of the first tape layer, then a second layer of HTS tape is wound. The same series of straight blocks 16 is used to compress the winding 18 against the bobbin 12 so that all the layers stick together. The layer winding process continues until the last odd number layer is complete, and a finish lead is soldered to a copper lead terminal that is secured to the other of the side plates 14 near the center line axis of the coil.

Please amend paragraph [0029] as follows:

[0029] A layer of pre-preg filament plies is then applied on the outside surface of the complete winding followed by a layer of copper foil with a rectangular cooling heat exchanger tube bonded on the outside surface. A series of straight blocks and corner blocks 16 (as shown in FIGURE 1) are assembled to the outside surface of the

copper foil via the side plates [16] 14 to compress the complete coil as moderate heat is applied to precision shape the coil outside surface. The finished coil form and winding assembly is baked at uniform temperature to cure the pre-preg. The temperature varies according to a curing temperature of the particular material. The resulting coil structure is a strong winding composite built to close tolerance dimensions.

IN THE CLAIMS

9. (Amended) A method of manufacturing high temperature superconducting [(HTS)] coils with an apparatus including two side plates disposed in facing relation, a bobbin disposed between the side plates, and a plurality of blocks assembled adjacent an outer edge of the side plates, the blocks being displaceable toward and away from the bobbin, the method comprising:

(a) winding [HTS] high temperature superconducting tape onto the bobbin;

(b) applying a binder to the wound [HTS] high temperature superconducting tape;

(c) compressing, with the plurality of blocks, the [HTS] high temperature superconducting tape and the binder against the bobbin [with the plurality of blocks]; and

(d) baking the compressed [HTS] high temperature superconducting tape and the binder to thereby cure the binder.

10. (Amended) A method according to claim 9, wherein steps (a), (b) and (c) are practiced for [each layer] multiple layers of the [HTS] high temperature superconducting tape one layer at a time.

11. (Amended) A method according to claim 9, wherein steps (b) and (c) are practiced after winding multiple layers of the [HTS] high temperature superconducting tape.

12. (Amended) A method according to claim 11, wherein step (b) is practiced by epoxy-impregnating the wound multiple layers of the [HTS] high temperature superconducting tape by a vacuum pressure impregnation process.

13. (Amended) A method according to claim 11, wherein step (a) is practiced using [HTS] high temperature superconducting tape with a pre-preg coating.

17. (Amended) A method of manufacturing high temperature superconducting [(HTS)] coils, the method comprising:

(a) winding [HTS] a first layer of high temperature superconducting tape onto a bobbin;

(b) applying a binder to the wound [HTS] high temperature superconducting tape;

(c) compressing the [HTS] high temperature superconducting tape and the binder; [and]

(d) winding a next layer of high temperature superconducting tape onto the bobbin;

(e) repeating steps (b), (c) and (d) until a desired number of high temperature superconducting tape layers are wound onto the bobbin; and

(f) baking the layers of compressed [HTS] high temperature superconducting tape and the binder to thereby cure the binder.